

THREE NEW SPECIES OF THE SPIDER GENUS *STIPHIDION* (ARANEAE :
AMAUROBIOIDEA : STIPHIDIIDAE) FROM AUSTRALIA

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Descriptions of *Stiphidion diminutum* n. sp., *S. adornatum* n. sp. and *S. raveni* n. sp. show a range of female genital patterns and some elaboration of the δ palp when compared with the type species, *S. facetum*. The distributional range of *S. facetum* is extended northward to southeastern Queensland. The relationship of *Stiphidion* to other Australasian genera is discussed briefly, resulting in the exclusion of *Ischalea* and *Procambidgea* from the Stiphidiidae.

□ Araneae, Stiphidiidae, *Stiphidion*, new taxa.

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Stiphidion facetum, a cribellate spider from Tasmania, was described by Simon (1902), and has since been found in northern areas of New Zealand (Marples, 1959; Forster and Wilton, 1973). It has been placed in several different families and at present is the type genus of the Stiphidiidae. In the following, abbreviations and measurements follow Davies (1976).

STIPHIDION SIMON, 1902.

Stiphidion Simon, 1902, *Bull. Soc. ent. Fr.* 15: 242. Type species *Stiphidion facetum* Simon, 1902 by original designation.

Amarara Marples, R.R. 1959, *Trans. Roy. Soc. N.Z.* 87: 354. Type species *Amarara fera* Marples, 1959 by original designation. Taxonomic decision of Lehtinen (1967). *A. fera* = *S. facetum*.

DIAGNOSIS

Cribellate spiders with strongly recurved posterior eye row, a very unusual arrangement in amaurobiid spiders. Posterior spinnerets slender, longer than the anterior pair; the apical segment as long as the basal. Umbrella-shaped web where the spider rests on the substrate in the hollow 'handle' of the web.

DESCRIPTION

Medium-sized spiders. Cephalothorax pale brown edged in darker brown-black usually with darker lines diverging from deep, long fovea and defining cephalic and thoracic areas. Abdomen with pale median, cardiac area, bordered anteriorly by white stripes or patches, usually two darker patches towards posterior end. See Forster and Wilton (1973, fig. 397) for photograph of *Stiphidion*. Long, slender, banded legs,

1423. Trochanters very shallowly notched. Feathery (ciliate) hairs on legs. Trichobothria in double row on tibiae, single row on metatarsi and tarsi. Bothria collariform, finely grooved; tarsal organ distal to trichobothria (Fig. 24). Few spines on legs, femora with 1–2 dorsal spines and usually one or more prolateral spines. Two closely spaced teeth on retromargin of cheliceral groove, 3 on promargin (Fig. 1). Row of long curved bristles on prolateral surface of chelicera. Labium wider than long, indented anteriorly. Sternum truncated anteriorly and pointed posteriorly; slightly wider than long, as wide as long or slightly longer than wide, depending on length of posterior point. Anterior and posterior eye rows strongly recurved, all eyes except ALE, encircled by black pigment (Fig. 2). AME large, usually larger than ALE. Cribellum divided; calamistrum sub-central. Large divided colulus in males. Anterior spinnerets stout, short apical segment. Posterior spinnerets slender, apical as long as basal segment (Fig. 3). Epigynum (Figs 4, 5, 6) with lateral fossae; lateral teeth absent. Tibia of δ palp with retrolateral and ventral apophyses (Fig. 16). Apex of cymbium short or long; bulge on retrolateral edge of cymbium. Median apophysis absent. Embolus spiniform arising prolaterally and describing semicircle to end retrolaterally. Extensive T-shaped conductor with forked apex (Figs 20, 21). The outer forked process supports the embolus and is grooved and pointed, occasionally bifid; the inner process laminate.

Stiphidion facetum Simon, 1902

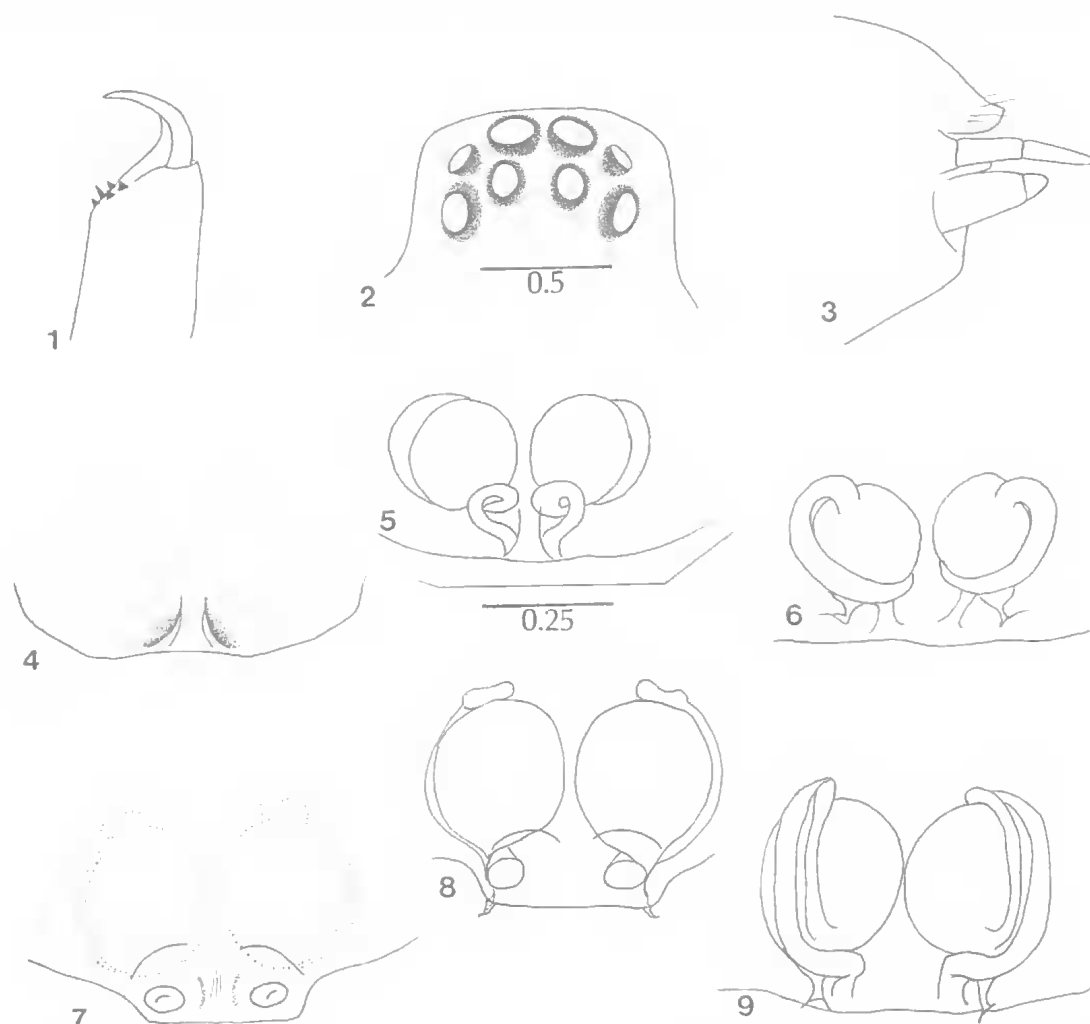
S. facetum has been re-described and illustrated

by Forster and Wilton (1973). For scanning electron micrographs of cribellum see Davies (1976, plate 60E, F). *S. facetum*, originally described from Tasmania has been collected in eastern Australia as far north as southeastern Queensland where it is found, from an altitude of about 500m, in open forest and in rainforest areas, commonly on the edge of rainforests along pathways and streams.

MATERIAL EXAMINED

New Town, Hobart, Tasmania, V.V. Hickman, xii.1968, 1 ♂, QM S261; Scotsdale-St Helens Road, Tasmania, A. Rozefelds, 6.i.1981, 1 ♀, QM S262;

Jenolan Caves, New South Wales, J. Gallon, 6.v.1985, 1 ♀, QM S263; Gibraltar Ra., via Glen Innes, New South Wales, R.J. Raven, 10.xi.1980, 2 ♀, QM S264; Binna Burra, Lamington Nat. Pk. SE. Queensland, Y. Lubin, R.J. Raven, V.E. Davies, 12.ii.81, 1 ♂ (SEM palp), 1 ♀, QM S265; Queen Mary Falls, Killarney, SE. Queensland, R.J. Raven, 26.xii.1974, 1 ♂, QM S266; Great Dividing Ra., nr Teviot Brook, SE. Queensland, R. Raven, 25.xii.1974, 1 ♂, 2 ♀, QM S267; Cedar Ck. nr Samford, SE. Queensland, R. Raven, V.E. Davies, 21.xii.1978, 1 ♀ (epigyne drawn), 1 ♂, QM S268; Mt Glorious, SE. Queensland, R. Raven, 1 ♂, QM S269; Mt Archer, SE. Queensland, J. Gallon 29.iv.1985, 1 ♂, QM S270; Dandabah, Bunya Nat. Pk. V.E. Davies, 4.iii.1976, 2 ♀, QM S271; Mt Goonamen, SE.



FIGS 1-6. *Stiphidion facetum* Simon. Fig. 1, chelicera, retrolateral. Fig. 2, eyes from above. Fig. 3, spinnerets, lateral. Figs 4-6, epigynum. Fig. 4, external (ventral). Fig. 5, external, cleared. Fig. 6, internal (dorsal), cleared. FIGS 7-9. *Stiphidion diminutum* sp. nov. epigynum, holotype. Fig. 7, external. Fig. 8, external, cleared. Fig. 9, internal, cleared.

Queensland, R. Raven, V.E. Davies, 4-5.xi.1980, 3 ♀, QM S272; Lower Dry Ck. Kroombit Tops, Queensland, V.E. Davies, J. Gallon, 9-19.xii.1983, 4 ♀, QM S273.

Stiphidion diminutum sp. nov.

MATERIAL EXAMINED

HOLOTYPE: From small umbrella-shaped web, Beauty Spot 98, (rainforest), 860m, Kroombit Tops, Queensland, 24°22', 151°01', V.E. Davies, J. Gallon, 9-19.xii.1983, 1 ♀, QM S243.

PARATYPES: Same locality, collectors, date, 1 ♂, QM S244, 1 ♀, QM S245; Three Moon Ck (rainforest) 940m, Kroombit Tops, Queensland, V.E. Davies, J. Gallon 9-19.xii.1983, 1 ♂, 1 penult. ♂, QM S246, 3 ♀, 2 j, QM S247; 600m, Bulburin State Forest, Queensland, 24°32', 151°20', V.E. Davies, R. Kohout, 17-24.iii.1975, 8 ♀, QM S248, 5 ♂, QM S249; Bulburin State Forest, Queensland, V.E. Davies, R.J. Raven, 25-28.iii.1977, 3 ♀, QM S250, 1 ♂, 3 j, QM S251.

DESCRIPTION OF FEMALE

CL 1.8, CW 1.3, AL 2.5, AW 1.6. *S. diminutum* is smaller than the other species. Colour and pattern similar to *S. facetum*. Ratio of AME:ALE:PME:PLE is 5:5:6:8. Labium much wider than long, 1:0.5. Sternum slightly wider than long. Few spines on legs. Femoral spines, first leg d1100, p0100; second and third legs d1000, fourth leg d1000, r0001. Epigynum with reduced ridge between widely spaced fossae; insemination ducts looped (Figs 7, 8, 9).

Other females varied in size: CL 1.5-1.8, CW 1.3-1.5, AL 2.2-2.8, AW 1.7-2.3.

DESCRIPTION OF MALE

CL 1.6, CW 1.3, AL 1.8, AW 1.2. Dimensions of other males: CL 1.4-1.7, CW 1.2-1.3, AL 1.6-2.0, AW 1.0-1.3. Ratio of AME:ALE:PME:PLE is 6:5:6:7. Labium wider than long 1:0.6. Sternum slightly wider than long. Femoral spines, first leg d1100, p0011; second leg d1100, p0001, third and fourth legs d1100, r0001. Palp: cymbium hardly extended beyond tegulum (Fig. 22); bifurcate retrolateral apophysis and ventral apophysis on tibia (Fig. 17).

Stiphidion adornatum sp. nov.

MATERIAL EXAMINED

HOLOTYPE: From umbrella-shaped web on rock face, Curtis Falls, Mt Tamborine Nat. Pk, 670m, SE.

Queensland 27°55', 153°12', N. Clyde Coleman, R.J. Raven, V.E. Davies, 27.vi.1980, 1 ♀, QM S252.

PARATYPES: Same locality, collectors and date, 2 ♂, QM S253, 4 ♀, QM S254; O'Reillys, 945m, Lamington Nat. Pk, SE, Queensland, 28°12', 153°05', E. Dahms, R.J. Raven, V.E. Davies, 15.xi.1977, 1 ♀, 1 j, QM S255, 2 ♂, QM S256; Mt Tamborine Nat. Pk, SE, Queensland, V.E. Davies, 22.vi.1975, 1 ♂, 4 j, QM S257; Mt Tamborine Nat. Pk, SE Queensland, C.L. Wilton, R.J. Raven, V.E. Davies, 10.vii.1974, 1 ♀, 1 j, QM S258.

DESCRIPTION OF FEMALE

CL 2.5, CW 1.8, AL 4.2, AW 2.6. Colour and pattern similar to *S. facetum*. Ratio of AME:ALE:PME:PLE = 9:8:7:9. Labium wider than long 1:0.75. Sternum as wide as long. Few spines on legs. Femoral spines, first leg d1100, p0011, r0011; other legs d1100, p0001, r0001. Epigynum with very long tightly coiled insemination ducts (Figs 10, 11, 12).

Variation in size of other females: CL 1.8-2.7, CW 1.7-1.8, AL 3.2-4.0, AW 2.3-2.8.

DESCRIPTION OF MALE

CL 2.6, CW 1.9, AL 3.3, AW 1.8. Dimensions of other males: CL 2.2-2.4, CW 1.6-2.0, AL 2.8-3.0, AW 1.6-1.8. Ratio of AME:ALE:PME:PLE is 9:6:9:9. Legs longer than those of female, similar spination. Palp: greatly extended T-shaped conductor embracing sides of very long cymbium (2.0); embolus very long, lying along rolled outer edge of conductor (Fig. 23); tibia with bifurcate retrolateral apophysis and ventral apophysis (Fig. 18). The species is named for the elaborate palp. Other material was collected from Gibraltar Ra., New South Wales, Stotts Is., Tweed R., New South Wales, and Mary Cairncross Park nr Maleny, SE, Queensland.

One ♂ was found in female's web; she was in the handle of umbrella and the male outside this area.

Stiphidion raveni sp. nov.

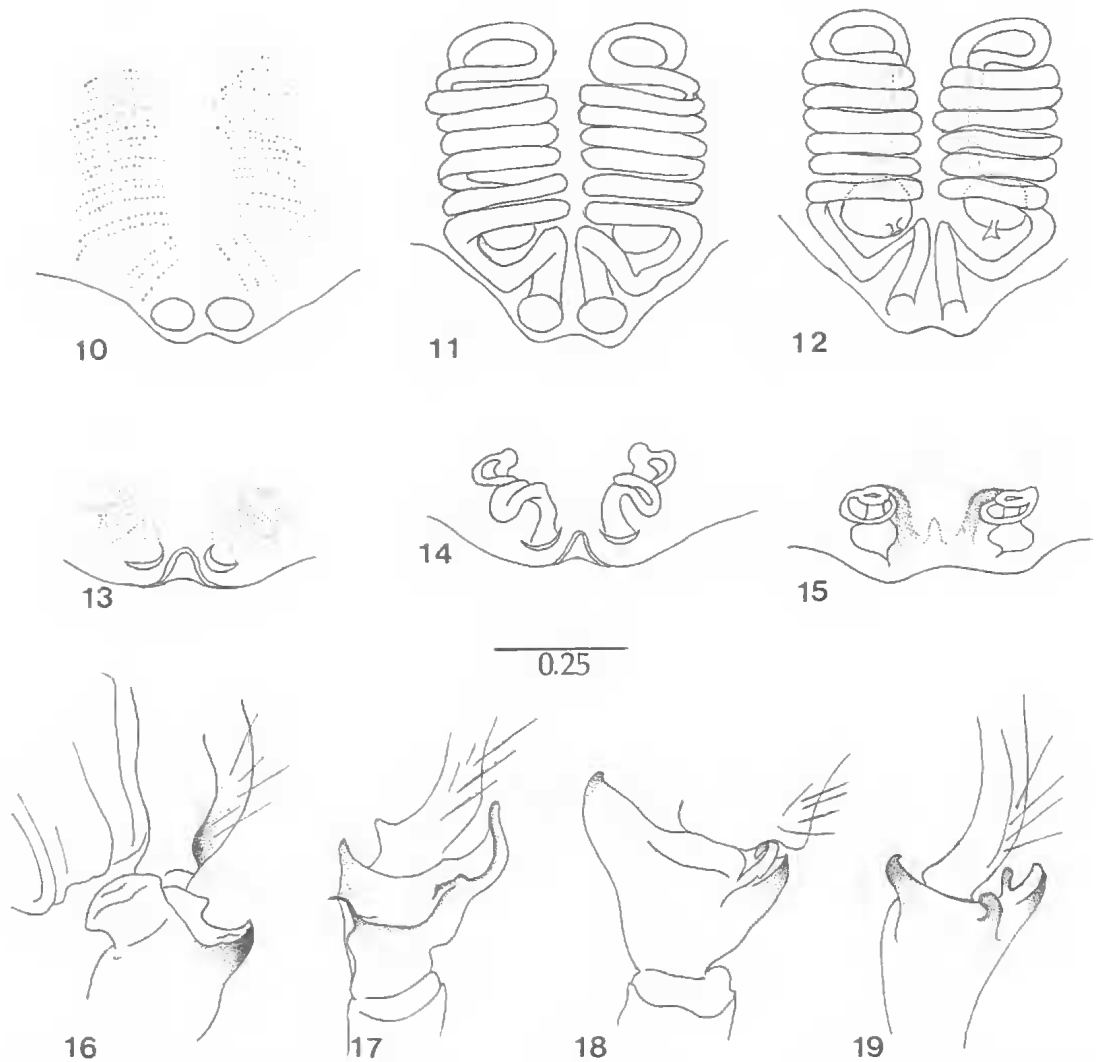
MATERIAL EXAMINED

HOLOTYPE: From web under rock, New England Nat. Pk, 1500m, snow gum (*Eucalyptus pauciflora*) forest, New South Wales, 30°30', 152°30', R.J. Raven, 3.xii.1973, 1 ♀, QM S259.

PARATYPE: New England Nat. Pk, New South Wales. W. Nash, R.J. Raven, 15.vii.1975, 1 ♂, 1 j, QM S260.

DESCRIPTION OF FEMALE

CL 2.6, CW 1.9, AL 3.3, AW 2.3. The abdominal pattern differs a little from *S. facetum* in that the cardinal area is bordered by



FIGS 10–12. *Stiphidion adornatum* sp. nov., epigynum, S254. Fig. 10, external. Fig. 11, external, cleared. Fig. 12, internal, cleared.

FIGS 13–15. *Stiphidion raveni* sp. nov., epigynum, holotype. Fig. 13, external. Fig. 14, external cleared. Fig. 15, internal, cleared.

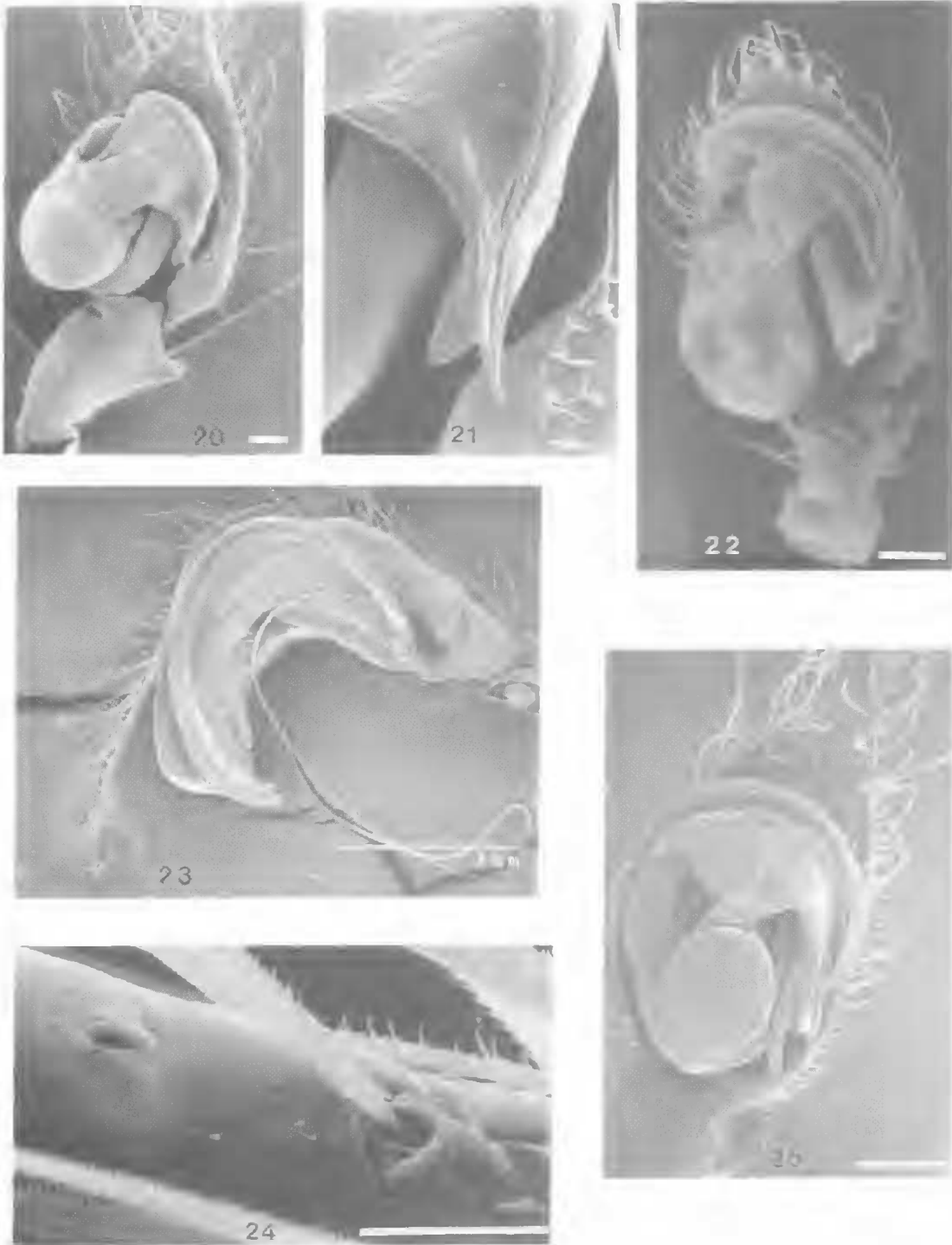
FIGS 16–19. ♂ tibial apophyses, retrolateral. Fig. 16, *Stiphidion facetum*. Fig. 17, *S. diminutum*. Fig. 18, *S. adornatum*. Fig. 19, *S. raveni*.

white patches rather than stripes. Ratio of AME:ALE:PME:PLE is 8:7:8:9. Labium wider than long 1:0.8. Sternum longer than wide 1:0.9. Femoral spines, first leg d1100, p0011, r0010; second leg d1100, p0011, r0011, third and fourth legs d1100, p0001, r0001. Epigynum with loosely coiled insemination ducts (Figs 13, 14, 15).

DESCRIPTION OF MALE

CL 2.3, CW 1.7, AL 2.5, AW 1.5. Ratio of

AME:ALE:PME:PLE is 7:6:7:8. Labium wider than long 1:0.8. Sternum slightly longer than wide. Femoral spines, first leg d1100, p0011, r0011; second leg d1100, p0011, r0011; third leg d1100, p0011, r0011; fourth legs missing. Palp: cymbial apex short and pointed; outer process of conductor is bifid, inner process elongate (Fig. 25); trifurcate retrolateral apophysis and ventral apophysis on tibia (Fig. 19). The species is named for Robert Raven.



FIGS 20–25. *Stiphidion facetum*, 1. ♂ palp. Fig. 20, ventral, scale line 100 μ . Fig. 21, embolus on tip of bifurcate conductor, scale line 25 μ . Figs. 22, 23, 1. palp, ventral. Fig. 22, *S. diminutum* S246, scale line 100 μ . Fig. 23, *S. adornatum*, S253, embolus displaced. Fig. 24, *S. facetum*, tarsal organ and trichobothrial base, scale line 20 μ . Fig. 25, *S. raveni*, S260, scale line 160 μ .

FAMILY PLACEMENT AND RELATIONSHIPS

Stiphidion was originally placed in the Psecridae (Simon, 1902) and later in the Stiphidiinae (Dalmás, 1917) in that family. Marples (1959) assigned the genus (as *Amarara*) to the Dictynidae. Lehtinen (1967) transferred the Stiphidiinae, containing *Stiphidion*, *Baiami* and *Tjurunga*, to the Amaurobiidae. *Tjurunga*, known only from a female (type in Paris) from Tasmania, is not considered here. Elevated to family level (Forster and Wilton, 1973), the Stiphidiidae were considered to contain *Stiphidion*, *Baiami*, *Procambidgea*, *Corasoides* and the New Zealand genera *Cambridgea* (Berland's (1924) New Caledonian species, *C. simoni* does not appear to belong in the genus), *Nanocambridgea* and *Ischalea*.

Until more species of the Australian amaurobioids are described and familial synapomorphies are established, stiphidiine relationships will remain uncertain; some observations, however, may be made. *Ischalea* has least in common with the other genera: its habitus (Forster and Wilton, 1973, fig. 470), the presence of lateral teeth on the epigynum and a well developed median apophysis are enough to exclude it from the Stiphidiidae. *Procambidgea* has marked trochanteral notches, a proximal calamistrum and very reduced AME unlike any of the other genera, so that it too is unlikely to belong here.

In a comprehensive revision of *Baiami*, Gray (1981) found that the species showed a southern Australian distribution and he considered that *Baiami* was related to several undescribed genera from this region but probably not to *Stiphidion*. It is known that monotypic *Corasoides*, a large cribellate spider is widely distributed in the southern half of Australia and also occurs in New Guinea (Main, 1982). It has a large sheet web on the top of which it runs, unlike *Baiami*, *Cambridgea* and *Nanocambridgea* which hunt under their sheets. The retreat of *Corasoides* goes down into the ground or into a hollow in a tree trunk where its thick, spherical egg-sac is placed. This is coated with alternative layers of soil and particles of dirt or wood. *Cambridgea* also coats its egg-sacs (up to 4) with debris from the ground and hangs them in its web (Forster and Forster, 1973). *Corasoides* lacks feathery (ciliate) hairs but with *Stiphidion* and *Baiami* it shares shallowly notched trochanters; a long spiniform embolus;

a large broad conductor the tip of which is bifurcate; a complex tibial apophysis consisting of a divided retrolateral, and a ventral apophysis; all lack a median apophysis. *Stiphidion* and *Baiami* have a sub-central calamistrum.

Cambridgea and *Nanocambridgea* have a small median apophysis, short spiniform embolus and usually a stridulatory apparatus of some kind between the pedicel and abdomen; none of these characters is found in the other genera. Monotypic *Nanocambridgea* has un-notched trochanters, feathery hairs, recurved eyes like *Stiphidion* and an epigynum and broad spiral conductor very like some *Corasoides*.

An undescribed Tasmanian cribellate, known only from females has an umbrella-shaped web (R. Raven pers. comm.) and an internal epigynum very similar to *Stiphidion adornatum*. It has a large divided colulus, slightly recurved posterior eye row and slender posterior spinnerets which, unlike *Stiphidion*, are not longer than the anterior pair. It is, without doubt, a stiphidiine. As for *Baiami*, *Corasoides*, *Cambridgea* and *Nanocambridgea* they have the following characters in common with *Stiphidion*: slender posterior spinnerets, AME as large or only slightly smaller than ALE, sub-central calamistrum (when present), epigynum without lateral teeth, ♂ palp with spiniform embolus, extensive conductor and reduced or absent median apophysis. Though probably not stiphidiines they are retained in the Stiphidiidae.

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